CLAIMS

What is claimed is:

1. An interleaver having a susbtrate jam detector comprising:

first and second conveyors, the first conveyor adapted to feed a product onto the second conveyor;

a substrate feed mechanism having a feed path positioned to insert a predetermined length of substrate between the first and second conveyors and onto the second conveyor such that the substrate is adapted to be located under the product as the product is transferred from the first conveyor to the second conveyor;

at least one jam detector sensor located along at least one of the feed path from the substrate feed mechanism and the second conveyor which is adapted to detect when a substrate passes from the substrate feed mechanism onto the second conveyor; and

a controller connected to the at least one jam detector sensor and to the substrate feed mechanism such that upon detection of an unsuccessful substrate feed, the controller turns off the substrate feed mechanism.

2. The interleaver of claim 1, wherein the jam detector sensor comprises a photo-eye.

3. The interleaver of claim 1, wherein the jam detector sensor comprises a fiber optic cable connected to an optic sensor connected to the controller, the fiber optic cable having an end positioned adjacent to at least one of the feed path and the second conveyor.

4. The interleaver of claim 3, wherein the fiber optic cable is bendable.

5. The interleaver of claim 1, further comprising a product detector located along the first conveyor to generate a signal to activate the substrate feed mechanism.

6. The interleaver of claim 1, wherein the substrate feed mechanism includes a perforator and at least one acceleration roller for separating the substrate to be interleaved along a perforation line, and the at least one jam detector sensor is located between the perforator and the at least one acceleration roller.

7. Method of detecting a jam in a substrate interleaver for products traveling along a conveyor path, comprising:

(a) providing first and second conveyors, the first conveyor adapted to feed a product onto the second conveyor;

(b) positioning a jam detector sensor along at least one of a substrate feed path of a substrate feed mechanism positioned to insert substrates under product being conveyed by the first conveyor to the second conveyor and the second conveyor;

(c) detecting a product traveling along the first conveyor and initiating a substrate feed sequence from the substrate feed mechanism;

(d) sensing at least one of a substrate leading edge passing the jam detector sensor within a predetermined time, a continuous blockage of the jam detector sensor, and a substrate trailing edge passing the jam detector sensor within a second predetermined time; and

(e) turning off the substrate feed mechanism in the event that a jam is detected.

8. The method of claim 7, wherein the substrate feed mechanism is turned off prior to feeding a next substrate.

9. The method of claim 7, further comprising sounding an alarm when the jam is detected.

10. The method of claim 9, further comprising clearing the jam and resetting the jam detector.

11. The method of claim 7, wherein the jam detector sensor includes a fiber optic cable, and positioning a sensing end of the fiber optic cable along the substrate feed path.

12. The method of claim 7, further comprising generating a signal to turn off upstream equipment when a jam is detected.